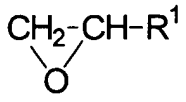
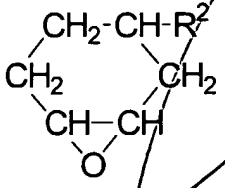
A) 3 to 30 % by mol of a repeating unit derived from propylene oxide;

B) 96 to 69 % by mol of a repeating unit derived from ethylene oxide; and

C) 0.01 to 15 % by mol of a repeating unit derived from a crosslinkably reactive monomer represented by formula (III-1) and/or formula (III-2):



(III-1)



(III-2)

wherein R^1 and R^2 are groups each having a reactive functional group,

said polyether copolymer being obtained by reacting the propylene oxide, the ethylene oxide and the crosslinkably reactive monomer of the formula (III-1) and/or formula (III-2) with each other in the presence of a ring opening polymerization catalyst, and

the crosslinked material being produced by utilizing reactivity of crosslinkable components of the polyether copolymer.

37. The solid polymer electrolyte according to claim 36, wherein the reactive functional group in the repeating unit (C) is (a) an ethylenically unsaturated group, (b) a reactive silicon group, (c) an epoxy group or (d) a halogen atom.

38. The solid polymer electrolyte according to claim 37, wherein the monomer having the ethylenically unsaturated group which constitutes the repeating unit (C) is selected from the group consisting of allyl glycidyl ether, 4-vinylcyclohexyl glycidyl ether, a-terpenyl glycidyl ether, cyclohexenyl methyl glycidyl ether, p-vinylbenzyl glycidyl ether, allyl phenyl glycidyl ether, vinyl glycidyl ether, 3,4-epoxy-1-butene, 3,4-epoxy-1-pentene, 4,5-epoxy-2-pentene, 1,2-epoxy-5,9-cyclododecadiene, 3,4-epoxy-1-vinyl cyclohexene, 1,2-epoxy-5-cyclooctene, glycidyl acrylate, glycidyl methacrylate, glycidyl sorbate, glycidyl cinnamate, glycidyl crotonate and glycidyl-4-hexenoate.

39. The solid polymer electrolyte according to claim 37, wherein the monomer having the reactive silicon group which constitutes the repeating unit (C) is selected from the group consisting of 3-glycidoxy propyl trimethoxy silane, 3-glycidoxy propyl methyl dimethoxy silane, 4-(1,2-epoxy) butyl trimethoxy silane and 2-(3,4-epoxy cyclohexyl) ethyl trimethoxy silane.

40. The solid polymer electrolyte according to claim 37, wherein the monomer having two epoxy groups which constitutes the repeating unit (C) is 2,3-epoxypropyl-2',3'-epoxy-2'-methylpropyl ether or ethyleneglycol-2,3-epoxypropyl-2',3'-epoxy-2'-methylpropyl ether.

41. The solid polymer electrolyte according to claim 37, wherein the monomer having the halogen atom which constitutes the repeating unit (C) is selected from the group consisting of epichlorohydrin, epibromohydrin and epiiodohydrin.

42. The solid polymer electrolyte according to claim 37, wherein the polyether copolymer comprises: 5 to 25 % by mol of the repeating unit (A); 94 to 74 % by mol of the repeating unit (B); and 0.01 to 10 % by mol of the repeating unit (C).

43. The solid polymer electrolyte according to claim 36, wherein the electrolyte salt compound (II) is a compound composed of a cation selected from metal cation, ammonium ion, amidinium ion and guanidium ion, and an anion selected from chloride ion, bromide ion, iodide ion, perchlorate ion, thiocyanate ion, tetrafluoroborate ion, nitrate ion, AsF_6^-, PF_6^-, stearylsulfonate ion, octylsulfonate ion, dodecylbenzenesulfonate ion, naphthalenesufonate ion, dodecylnaphthalenesulfonate ion, 7,7,8,8-tetracyano-p-quinodimethane ion, $X^1SO_3^-$, $[(X^1SO_2)(X^2SO_2)N]^-$, $[(X^1SO_2)(X^2SO_2)(X^3SO_2)C]^-$ and $[(X^1SO_2)(X^2SO_2)YC]^-$ (wherein X^1, X^2, X^3 and Y respectively represent an electron attractive group).

44. The solid polymer electrolyte according to claim 43, wherein X^1, X^2 and X^3 independently represent a perfluoroalkyl group having 1 to 6 carbon atoms or a perfluoroaryl group having 6 to 20 carbon atoms, and Y represents a nitro group, a nitroso group, a carbonyl group, a carboxyl group or a cyano group.

45. The solid polymer electrolyte according to claim 43, wherein the metal cation is a cation of a metal selected from Li, Na, K, Rb, Cs, Mg, Ca, Ba, Mn, Fe, Co, Ni, Cu, Zn and Ag.

46. The solid polymer electrolyte according to claim 36, wherein the aprotic organic solvent is an aprotic organic solvent selected from ethers or esters.

47. The solid polymer electrolyte according to claim 36, wherein the polyalkylene glycol is polyethylene glycol or polypropylene glycol.

48. The solid polymer electrolyte according to claim 36, wherein the derivative of the polyalkylene glycol is an ether derivative or an ester derivative.

49. The solid polymer electrolyte according to claim 36, wherein the metal salt of the polyalkylene glycol is selected from the group consisting of a sodium salt of the polyalkylene